

REMARKS

Claims 14-19 and 22-27 are pending in this application. By this Amendment, claims 14-19 and 22-26 are amended. Claim 27 is added. The amendments and added claim introduce no new matter because they are supported by at least the claims, the depictions in at least Figs. 2-5 and 8 and the accompanying descriptions, and the paragraph beginning on page 6, line 4 of Applicants' disclosure, as originally filed. Claims 20 and 21 are canceled without prejudice to, or disclaimer of, the subject matter recited in those claims. Reconsideration of the application based on the above amendments and the following remarks are respectfully requested.

The Office Action, in paragraph 4, rejects claims 14-16, 20, 24 and 26 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,961,740 to Wambach et al. (hereinafter "Wambach '740") in view of U.S. Patent No. 3,688,248 to Modrey and in evidence of U.S. Patent No. 6,075,201 to Wambach (hereinafter "Wambach '201"). The Office Action, in paragraph 11, rejects claims 17, 18, 22 and 23 under 35 U.S.C. §103(a) as being unpatentable over Wambach '740 and Modrey, and further in view of U.S. Patent No. 4,880,401 to Shima et al. (hereinafter "Shima"). The Office Action, in paragraph 15, rejects claim 19 under 35 U.S.C. §103(a) as being unpatentable over Wambach '740 and Modrey and further in view of U.S. Patent No. 6,111,772 to Lee et al. (hereinafter "Lee"). The Office Action, in paragraph 17, rejects claim 21 under 35 U.S.C. §103(a) as being unpatentable over Wambach '740 and Modrey and further in view of U.S. Patent No. 6,494,995 to Battah. The Office Action, in paragraph 19, rejects claim 25 under 35 U.S.C. §103(a) as being unpatentable over Wambach '740 and Modrey and further in view of U.S. Patent No. 3,721,948 to Brandt et al. (hereinafter "Brandt"). These rejections are respectfully traversed.

At the outset, it should be realized that claim 14 is amended to incorporate the subject matter of claims 20 and 21. As such, each of the above-enumerated rejections other than the rejection of claim 21 is rendered moot because these rejections do not include a rejection of the subject matter of claim 21 over the other various combinations of applied references. It is for this reason that the remarks below will address the rejection of the subject matter of claim 21, as incorporated into claim 14, over the combination of Wambach '740, Modrey and Battah.

Claim 14 recites a photovoltaic module comprising: a plurality of photovoltaic cells connected in series by connecting conductors and located within a tight internal volume delineated between two substrates by a seal, an under-pressure being maintained within the internal volume; and an external connector terminal comprising a block of insulating material glued to one end of the module to connect a second connector located completely external to the module to at least one first connector passing tightly through the seal, the at least one first connector having an internal end in electrical contact with a free end of a connecting conductor associated with a cell arranged at the end of the module, the under-pressure and a deformation of at least one of the internal end of the at least one first connector or the free end of the connecting conductor providing the electrical contact by pressure. The combination of Wambach '740, Modrey and Battah cannot reasonably be considered to have suggested this specific combination of features.

Wambach '740 teaches a plate-shaped solar module, particularly for use as façade element or roof element with an other pane facing the incident light, at least one inner plate arranged at a distance behind it in the direction of light incidence to create an intermediate space and a peripheral construction running around the outer pane and the inner plate for connecting them in a sealing manner. Wambach '740 does not give any details regarding the contact between any internal end of a first connector and any free end of a connecting

conductor of an end cell as positively recited, among other features, in independent claim 14. Wambach '201 cannot be relied upon as overcoming this discrepancy in Wambach '740 because it does not give any detail regarding such contact either.

The Office Action, in fact, concedes that Wambach '740 fails to teach the contact between the connectors achieved, for example, by means of a deformation. The Office Action alleges that such a deformation is a conventional manner by which to connect electric connectors, citing Modrey as evidence of such a connection. The Office Action goes on to conclude that it would have been obvious to one of ordinary skill in the art to use an electric connector as suggested by Modrey in order to achieve better contact between the connector and the connecting conductor in the module of Wambach. The analysis of the Office Action in this regard fails for at least the following reason.

Modrey teaches a springy rolled metal pin such as a spirally rolled pin, the inner end portion of which is bent inward to form a springy tongue dividing the interior of the pin into two chambers (Abstract). The Modrey pin is formed by spirally winding a springy metal strip as is shown in Fig. 1-3. The internal end of the spiral is free to flex to maintain a conductor within the cylindrical pin (see, e.g., col. 4, lines 41-58). Interestingly, such a connector is not adapted for use with a photovoltaic module.

Furthermore, the combination of the above-enumerated references is conceded by the Office Action as failing to specifically teach a negative pressure created inside the tight internal volume now recited, among other features, in independent claim 14. The Office Action, however, alleges that Battah in its disclosure of a solar cell floating over a body of saline water creating a partial vacuum in the solar cell for drawing water vapor from the cell allegedly supplies the missing subject matter. The Office Action concludes it would have been obvious to one of ordinary skill in the art to operate the Wambach/Modrey system under a negative pressure as suggested by Battah in order to prevent deterioration of the solar cell

due to moisture. The analysis of the Office Action in this regard fails for at least the following reasons.

Battah does not concern a photovoltaic module at all. Rather, Battah is directed to a solar cell for desalination of sea water. Sea water partially fills the Battah solar cell and is heated directly by solar energy through transparent panels 56, 58 (see, e.g., Fig. 4). The water vapor is drawn by extraction pipes 40 and 41, which are connected to a vacuum pump 16. Condensation of the water vapor in the pipes heats the sea water located in a heating zone 73 positioned below the solar cell. The warm sea water rises into the cell through passages 90, 92, 94 and 96 to replace evaporated water (see col. 3, lines 18-49).

Such a cell cannot reasonably be considered to correspond to a photovoltaic cell for converting solar energy into electric energy. Additionally, although a partial volume is formed within each cell, an objective of this vacuum is to allow an evacuation of the water vapor, which is automatically replaced by sea water to be desalinated. In no instance is an under-pressure maintained within a tight internal volume of any module containing both photovoltaic cells. The use of a vacuum pump to evacuate water vapor within a sea water desalination cell would not reasonably have suggested the creation of the under-pressure condition in the tight internal volume in which photovoltaic cells of a photovoltaic module are classically located. In fact, the photovoltaic cells of Wambach '740 (and Wambach '201) are embedded in a resin without any opportunity structurally for having such ____ under pressure established by any means.

The Office Action, in its conclusion that one of ordinary skill in the art would have combined the disclosures of Wambach, Modrey and Battah in the manner suggested overlook several important factors required for the asserted obviousness analysis.

First, it is not clear that the standard for finding a reference to be analogous prior art is met in combining these references. The standard requires that "[i]n order to rely on a

reference as a basis for rejection of an Applicants' invention, the reference must either be in the field of Applicants' endeavor or, if not, then be reasonably pertinent to the particular problem with which the invention was concerned." MPEP §2141.01(a) cites several Federal Circuit precedents for the proposition that a reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his or her problem. It is unreasonable to conclude that one of ordinary skill in the art, given an issue regarding deterioration of the electrical connections discussed in Applicants' disclosure, would have had a reference to sea water desalination logically commended to his or her attention in considering such a problem. To conclude that when confronted with this problem, one of ordinary skill in the art might have turned to such a reference is a conclusion that can only be arrived at through the improper application of hindsight reasoning based on the roadmap provided by Applicants' disclosure.

Second, even post-*KSR*, the analysis supporting unobviousness rejection must be explicit. The Supreme Court in *KSR* approved the conclusions set forth in the Federal Circuit decision in *In re Kahn* (citations omitted) that "rejections on obviousness grounds cannot be sustained with mere conclusory statements; instead there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." This standard is not met here with the conclusory statement that one of ordinary skill in the art would have combined the resin-based photovoltaic cell of Wambach '704 with a vacuum type system such as that disclosed in Battah simply because Battah discloses using a vacuum. There is no rational underpinning for the articulated reasoning set forth in the Office Action to make the asserted combination.

Finally, it has not been adequately shown how one of ordinary skill in the art may have been predictably led to make the asserted combination with any reasonable expectation

of success. Certainly, it cannot be concluded that the photovoltaic cell of Wambach '704, embedded in a resin, could have modified in the manner suggested without making such drastic changes to the structure of the Wambach '704 device that would render the asserted combination impermissible.

For at least the above reasons, Wambach '704 (and Wambach '201), Modrey and Battah are not combinable in the manner suggested by the Office Action. Further, any permissible combination of these references would not have rendered obvious the combination of all of the features positively recited in independent claim 14. Further, claims 15-19 and 22-26 also would not have been suggested by this combination of references for at least the respective dependence of these claims directly or indirectly on an allowable base claim, as well as for the separately patentable features that each of these claims recites.

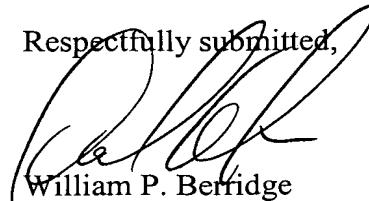
Accordingly, reconsideration and withdrawal of the rejections of claims 14-19 and 22-26 under 35 U.S.C. §103(a) as being unpatentable over the varying combinations of applied references are respectfully requested.

Claim 27 is allowable for at least its dependence on an allowable base claim, as well as for the separately patentable subject matter that this claim recites.

In view of the foregoing, Applicants respectfully submit that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 14-19 and 22-27 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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